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MUNICIPAL ILLUMINATION.

By J. A. G. SHIRK.

BEFORE the days of systematic street lighting only those ventured out at night who had urgent business or ample bodyguard. The committing of crime under cover of darkness was what drove our grandfathers to devise their crude systems of street illumination. City streets have become safe just to the extent that they have become well lighted. It is true that light alone would be insufficient protection, but it is equally true that police alone, in reasonable numbers, can not afford complete protection. A city in these days can certainly afford, and the citizens reasonably expect, to have the fullest possible degree of protection every hour of the day. Thus the first reason for instituting street lights is still one of the main factors in determining the nature and amount of municipal illumination.

Closely associated with the *reduction of the amount of crime* is the *prevention of accidents* to those who use our walks and streets at night. We all know how a small object on the walk, or some defect in it, may become a menace to our safety when there is insufficient illumination. Vehicles which travel rapidly carry their own special means of lighting the road, but it is unnecessary that pedestrians carry with them a lantern as in the earlier days of our national history. And all cities are striving to make the passage of their walks more convenient and pleasant, as well as safe, by introducing a well-distributed system of illumination.

For this purpose to-day there is nothing superior in point of cost and service to the new nitrogen-filled tungsten lamps installed on pole brackets with good reflectors. These lamps have the short, rugged filament characteristic of all series lamps, and have an efficiency of about .6 watt per candle-power, in comparison with the form still used in many installations of the longer and finer filament of the multiple lamps, giving only about half as much light for the same amount of electrical energy consumed.

In some cities there is still in use the old, glaring arc lamps placed at the street intersections, and often, on account of

their expense of operation, only installed at alternate corners. This means that if there are many trees, the walks especially are very poorly lighted midway in the block. These lamps consume about 450 watts, and are generally rated as 800 to 1000 candlepower. For the same number of watts of electrical power used we might install seven or eight 80 c. p. nitrogen-filled lamps, thus making from three to four lights per block; or if they were distributed along the cross streets as well, one at each intersection and one at the middle of each block. This would give a uniform illumination of sufficient intensity for the smaller city or town where crime prevention is not the main consideration. The cost of maintenance of these lamps averages about \$10 per year each, while the arc lamps average \$75 per year. These are the prices for both electricity and lamp maintenance. Thus it will be seen that the seven or eight distributed units do not cost more than the one arc lamp. Many cities are tied to the use of arcs for ten to fifteen years yet, on account of the customary twenty-year franchises which are given for the service. There is an enormous amount of money invested in the thousands of arc lamps now installed, and the change to the distributed series tungsten lamps is generally made only at the expiration of franchises.

Besides these reasons for the illumination of our streets and alleys, there is the problem of rendering certain streets attractive, especially the main business streets. The problem of efficient and economical street lighting is of great importance to those actively interested in improving the appearance of any city. The progressive merchant is fully aware of the value of artistic lighting and of its effect on the volume of trade, and it has been demonstrated repeatedly that many advantages are gained by the city having a distinctive decorative street illumination system.

Generally speaking, the value of property on a business street is directly proportionate to the number of people who make use of the street as a thoroughfare. A corner lot on the main business street is worth more than a lot in the latest addition to the city, simply and solely because a greater number of people pass that corner every day. It not infrequently happens that opposite sides of a street on the same block have considerably different values, due to the same cause. Anything which adds to the traffic of the street must, therefore,

add to the value of the abutting property. While conditions of accessibility to necessary utilities, such as railway stations, hotels, banks, public buildings, etc., have doubtless a preponderating influence in determining the traffic of a street, it is equally true that no subsidiary condition has such a vital effect as the lighting. It would, of course, be absurd to expect to create a popular business street out of a thoroughfare lying far beyond the natural limits of traffic, but there is no question that any street directly tributary to a business thoroughfare can be fully doubled in value by the installation of spectacular lighting.

In a more general way, lighting the entire business section of a city up to the standards of modern illumination does for the city, as a whole, what the lighting of a particular street does for that section; it increases values by increasing the traffic, not only from the city itself, but from the surrounding country and near-by towns. Good street lighting, more than anything else, gives to the city an air of progressiveness and prosperity. "Nothing succeeds like success"; to appear prosperous is the first step to being prosperous. Anything which adds to the general attractiveness of a city excites interest in its affairs and fosters public spirit and civic pride. Every citizen should be able to point with pride to his own city; but how shall he do this when he sees such woeful deficiency as poor public lighting?

The merchants of a city feel the competition of other cities with good lighting systems, and are generally the ones directly responsible for the promotion of a scheme of ornamental illumination. If they be so fortunate as to have an electric-light company managed by a far-sighted and progressive superintendent, the problem of securing an excellent system at a reasonable cost is greatly simplified. Pittsburg, Kan., had just such a combination of progressive men in their Chamber of Commerce, and gradually a plan was evolved which was larger and finer than its first promoters had fondly dreamed of. At first it was proposed to install a multiple lighting system, using the ordinary 110-volt tungsten lamps, but when the writer brought it to the attention of the engineer and commissioners that a new nitrogen-filled series tungsten lamp had just been placed on the market, which would give double the amount of light, it was decided to abandon the original plan

and substitute for it a modern series system. Such a system was finally completed and formally opened Friday night, October 21, 1914. Eight poles per block were installed, each carrying four lamp brackets. The poles are made of three different sizes of seamless steel tubing, welded together, and fitted with ornamental collars, base, brackets and cross-arms. They are set six feet in the ground and are surrounded by concrete 2 ft. by $1\frac{1}{2}$ ft., in section, with the 2-foot side parallel to the curb. This heavy base was necessary, as the poles were also used to support the trolley wires for the street-railway system. In return for the privilege of attaching the trolley wires to these poles, the street-car company assisted in the erection of the poles. Fourteen-inch inverted balls are used, with their centers 13 ft. 6 in. above the sidewalk grade. A large number of different makes were tested to secure the best one available, considering cost, absorption of light, strength, and hiding of the filament of the lamp. The Carrara (Dense) globe, made by the Glieson Tiebout Glass Company, of Brooklyn, was selected as meeting best all the conditions. Its apparent absorption was approximately 15 per cent, its weight $5\frac{1}{4}$ pounds, and it almost completely hid the lamp, thus giving out a beautiful soft glow. We believe it will take a severe hail storm to injure these globes, since they are unusually heavy for the amount of light absorbed.

Three lamps are switched off at eleven o'clock, while the one over the street is operated all night. No moonlight schedule is followed, the lamps being operated every night.

The three smaller ones are the standard 80 c. p. nitrogen-filled series tungsten, using approximately 56 watts, and the larger one is a special 100-watt, 140 c. p. lamp of the same type. These lamps cost about 88 cents and \$1, respectively. The wires are carried overhead in two series circuits, using No. 8 weatherproof wire. This was furnished and installed by the electric-light company. The wires inside the pole are 10,000-volt No. 6 solid standard wire, and enter the pole through moisture-proof bushings. One hundred and seventy-three poles were installed at an average cost of \$81 per pole. This was paid by a tax on adjacent property in a similar manner to a paving tax. The city pays for the electric current and maintenance of the system. The electric company made the very moderate rate of \$14 per pole per year for the

current and lamp renewals. This will give them a rate of about 2 cents per kilowatt hour. This is a low price, but the company looks on the new white way as one of its best advertisements, and electric light and power have become more popular since this fine system has been installed.

The close proximity of the lamp posts, averaging less than 95 feet, makes the illumination very uniform, and the soft glow of the globes renders an effect more pleasing than the great majority of such systems. It is justly a civic improvement to which every citizen of Pittsburg may point with pride.